

Appl. No. 10/051,724
 Atty. Docket No. 8840
 Amdt. dated 04/21/2004
 Reply to Office Action of 01/21/2004
 Customer No. 27752

REMARKS

Applicants respectfully request reconsideration of the present application.

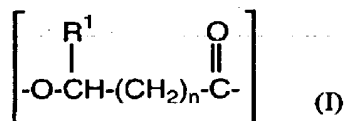
Claims 1, 12 and 15 have been amended to more particularly define the invention. No additional claims fee is believed to be due. It is believed these changes do not involve any introduction of new matter. Consequently, entry of these changes is believed to be in order and is respectfully requested.

ART REJECTIONS

Before turning to the Examiner's rejections under 35 U.S.C. §102(b) and §103(a), it may be helpful to briefly review the substance of Applicants' invention as well as the structures of the polyhydroxyalkanoate copolymers (PHAs) disclosed therein.

Applicants' claimed invention is directed to environmentally degradable films comprising a specifically recited polyhydroxyalkanoate copolymer (PHA) and a polylactic acid polymer or copolymer (PLA). Laminates having a first layer comprising the specifically recited PHA copolymer and a second layer comprising a PLA polymer or copolymer are also disclosed. Such compositions, either as blends or different components, generally provide improved material properties in comparison to the deployment of the specifically recited PHA copolymers alone or to PLA polymers or copolymers alone. Properties in which the blended materials or laminates are different and improved are any one of hardness/softness, brittleness/flexibility, tack, i.e., stickiness, toughness, ductility, processability, or opaqueness/transparency, for example. Furthermore, the PHA copolymers of the present invention can be melt processed at much lower temperatures than that of conventional PHAs such as polyhydroxybutyrate (PHB) and polyhydroxybutyrate/valerate (PHBV), and thus are less susceptible to thermal degradation during processing.

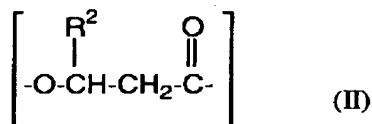
The specifically recited PHAs of the present invention are comprised of a first biodegradable polyhydroxyalkanoate heteropolymer comprising at least two randomly repeating monomer units (RRMUs). The first RRMU has the structure (I):



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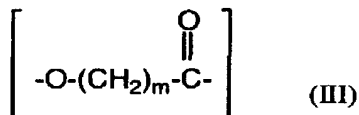
where, according to presently amended Claims 1, 12 and 15, "R¹ is H, or C1 or C2 alkyl, and n is 1 or 2, but with the proviso that when R¹ is a C1 alkyl, n is not 2, and where R¹ is a C2 alkyl, n is not 1." In other words, the first RRMU may be one of the following: (1) if R¹ is H and n is 1, then the first RRMU is 3-hydroxypropionate; (2) if R¹ is H and n is 2, then the first RRMU is 4-hydroxybutyrate; (3) if R¹ is C1 and n is 1, then the first RRMU is 3-hydroxybutyrate; and if R¹ is C2 and n is 2, then the first RRMU is 4-hydroxyhexanoate. But according to presently amended Claims 1, 12 and 15, in the first RRMU: (1) R¹ cannot be C1 when n is 2, therefore the first RRMU cannot be 4-hydroxyvalerate; and R¹ cannot be C2 when n is 1, therefore the first RRMU cannot be 3-hydroxyvalerate.

The second RRMU has the structure of at least one monomer selected from the group consisting of the structures (II) and (III). Structure (II) is disclosed as:



where R² is a C3-C19 alkyl or C3-C19 alkenyl. Thus the second RRMU with structure (II) cannot be a hydroxyvalerate, because the shortest R² alkyl group is C3, in which case structure (II) is 3-hydroxyhexanoate.

Structure (III) is disclosed as:



wherein, according to presently amended Claims 1, 12 and 15, m is from 2 to 3 or from 5 to 9. Thus structure (III) varies from the shortest polymer, where m is 2 or 2-hydroxypropionate, to the longest polymer, where m is 9 or 9-hydroxydecanoate. M is not 4, therefore structure (III) cannot be 5-hydroxyvalerate.

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Rejections Under 35 U.S.C. § 102(b) Over WO 96/08535 and JP 10147653

Claims 1-15 have been rejected under 35 U.S.C. § 102(b) as being anticipated by WO 96/08535. Claims 1, 3-6 and 15 have been rejected under 35 U.S.C. § 102(b) as being anticipated by JP 10147653. Applicants respectfully disagree with these rejections particularly in light of the present amendments to Claims 1, 12 and 15.

The Office Action states that the above identified references anticipate the claims as they stood prior to the current amendments. Specifically, the Office Action states that both WO 96/08535 and JP 10147653 disclose the polyhydroxyalkanoate copolymer polyhydroxybutyratevalerate or PHBV. In general, the valerate monomer unit of PHBV may exist in several isomeric forms including: 3-hydroxyvalerate, 4-hydroxyvalerate and 5-hydroxyvalerate. As noted in the Amendments to the Claims section, instant Claims 1, 12 and 15 have been amended to specifically exclude any form of hydroxyvalerate monomer from the environmentally degradable compositions comprised in part by a PHA copolymer comprising at least two randomly repeating monomer units. Therefore, the newly amended claims specifically exclude PHA copolymers which contain PHBV. In light of these amendments, WO 96/08535 and JP 10147653 do not anticipate Claims 1, 12 and 15 and the balance of the claims that ultimately depend therefrom. Consequently, Applicants respectfully request the withdrawal of the § 102(b) rejections.

Rejections Under 35 U.S.C. § 103(a) Over EPA 0,753,539

Claims 1-5 have been rejected under 35 U.S.C. § 103(a) as being obvious in light of EPA 0,753,539. Applicants respectfully disagree with these rejections particularly in light of the present amendments to Claim 1.

The Office Action states that the claims as they stood prior to the current amendments were obvious in light of the above identified reference for the explanations that were cited with regard to the § 102(b) rejections. As discussed above, instant Claim 1 has been amended to specifically exclude any form of hydroxyvalerate monomer from the environmentally degradable compositions comprised in part by a PHA copolymer comprising at least two randomly repeating monomer units. Therefore, the newly amended Claim 1 specifically excludes PHA copolymers which contain PHBV. In light of these amendments, Claim 1 and Claims 2-5

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which depend thereon are not obvious over EPA 0,753,539 since EPA 0,753,539 does not teach or suggest all of the instant claim limitations as per MPEP § 2143.

Based on the foregoing, Applicants respectfully submit that Claims 1-5 are not obvious over EP 0,753,539 and respectfully request that the Examiner's rejection under 35 U.S.C. §103(a) be withdrawn.

CONCLUSION

In light of the above foregoing remarks, Applicants believe that Claims 1-15 are now in form for allowance. Accordingly, it is respectfully requested that the claims be reconsidered, the rejections under 35 U.S.C. §102(b) and §103(a) be withdrawn, and the claims be allowed. Should the Examiner have any questions or wish to further discuss this matter, it is requested that the undersigned agent be contacted at (513) 634-9076.

Respectfully submitted,

By 

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